REMARKS

In an Office Action mailed September 5, 2003, claims 1-24 were pending and all claims were rejected. In response, Applicants have amended claims 1, 5, 6, 8, 9, 14-23, cancelled claim 7 and request reconsideration of the rejection and the allowance of claims 1 – 6 and 8-24, thereby placing the application in condition for allowance.

Claim Rejections

Claims 1-24 were rejected under 35 U.S.C. 103(a) on the basis of differing combinations of the art made of record.

Rejection of Claims 1-7 and 11-20 under 35 U.S.C 103(a)

Claims 1-7 and 11-20 were rejected under 35 U.S.C. 103(a) on the basis of Vogt et al. (U.S. Patent No. 5,442,709) in view of Patel et al. (U.S. Patent No. 5,479,449) and Whikehart et al. (U.S. Patent No. 5,936,438). In response Applicants have amended claims 1, 5, 6 and 14-20 and respectfully submit that claims 1-6 and 11-20 are allowable as amended herein. Claim 7 is herein cancelled.

Vogt et al. teach a decoder that receives a multiplexed signal and uses a matrix circuit to form L and R output signals. The Vogt et al. circuit directly connects the multiplexed signal to the matrix circuit as well as a corrected form of the matrix signal. Vogt et al. do not perform decimation of the sampling rate of all signals used to form inputs to the matrix circuit. In contrast, as amended herein,

Applicants' decoder uses decimators in each signal path that produces an output signal containing a sum of left channel and right channel information and a difference of left channel and right channel information. As Applicants teach at page 11, lines 22-23, "The lower the sampling rate, the more cost effective the remaining processing circuitry may be made." As amended herein, each of three decoder signal paths, a path that produces the L+R signal and a pair of quadrature mixer outputs that produce the L-R signal, contains one of three recited decimators for minimizing the cost of a stereo blender that uses the two signals to provide a Left output signal and a Right output signal. Vogt. et al. does not teach or recognize this significant cost reduction as being possible or needed for the circuitry that uses the L-R signal even though decimators 19 and 20 are taught in a correction signal portion to reduce the cost of a network 21 within the decoder. The reduced cost of the stereo blender in Applicants' decoder is significant because the stereo blender also has dynamically controlled filters that vary bandwidth of the (L-R) and (L+R) signals depending upon received signal conditions as recited in amended claim 1. Vogt et al. when combined with Patel et al. and Whikehart et al. do not teach or suggest in the Matrix Circuit disclosed by Vogt et al. the dynamic variation of bandwidth of filters in response to input signal conditions to form the L and R output signals. Dynamic variation of the bandwidth prior to amplification and summing/subtracting the L-R and L+R signals effectively removes noise from multipath echoes and other distortion sources. Without this dynamic bandwidth variation, the formation of the L and R signals by the circuit taught by Vogt et al. (and Collier et al., US Patent 5,404,405--not applied to these claims) directly include all the distortion into the output. The quality of reception is significantly lower. Without the use of decimation in the L+R and L-R signal paths the cost of implementing the bandwidth control and the filters is significantly higher. Patel et al. was cited for the proposition of teaching a

PLL using sine and cosine lookup tables to generate sine and cosine function outputs. While Patel et al. teach a detector with phase tracking for use in a receiver, the output of the FIG. 5 circuit of Patel et al. provides a signal to a rejection filter 30 that indicates the detection of in-phase received signals from a bandpass A/D converter 22 with an oscillating clock from oscillator 23. The Patel et al. FIG. 5 circuit does not "generate at least one trigonometric function". It should be understood that the phase angle estimating that is performed by the recited decoder of Applicants' claims may be implemented with circuitry other than a PLL. The use of lookup tables by Patel et al. is not particularly relevant to the allowability of the pending claims as Applicants acknowledge that others have used lookup tables for various functions. Claims 1-7 and 11-20 are distinguishable over Vogt et al. and Patel et al. for the reasons provided above. Whikehart et al. (U.S. Patent 5,936,438) was cited for the proposition of teaching two methods for obtaining different harmonically-related sinusoidal signals. The technique taught by Whikehart et al. of generating periodic sinewave signals without distortion by using a lookup table is not a specifically recited claim element of independent claims 1 and 18 from which all of the other claims associated with this rejection basis depend. Therefore, Applicants request the withdrawal of the rejection of claims 1-6 and 11-20.

Rejection of Claims 8-10 under 35 U.S.C 103(a)

Dependent claims 8-10 were rejected on the basis of Vogt et al. (U.S. Patent 5,442,709) in view of Patel et al. (U.S. Patent 5,479,449) and Whikehart et al. (U.S. Patent 5,936,438) as applied above, and further in view of Collier et al. (U.S. Patent 5,404,405). Support for the amendments made herein to claim 8 may be

found, inter alia, at page 16, lines 4-8 and support for the amendments made herein to claim 9 may be found, inter alia, at page 16, lines 15-17. Collier (U.S. Patent 5,404,405) was cited for teaching a stereo decoder having filters 40, 42 that provide outputs to combining circuitry (44, 46). In addition to not teaching the use of decimators in the L+R and L-R signal path that is connected to the combining circuitry, Collier et al. also do not teach or suggest the dynamic variation of bandwidth of filters in the circuitry that creates the Right and Left output signals. Each of these recited features, taken alone or in combination, is neither suggested nor taught by the prior art made of record, considered either alone or in combination. It should be understood that a decoder as recited herein may be implemented having the dynamic bandwidth control of the filters in the stereo blender either with or without the decimation of the L-R and L+R signals depending upon a target cost of the circuitry required to implement these functions.

Rejection of Claims 21-24 under 35 U.S.C 103(a)

Claims 21-24 were rejected under 35 U.S.C. 103(a) as being unpatentable over Vogt et al. (U.S. Patent 5,442,709) in view of Collier et al. (U.S. 5,404,405) which have both been discussed above. Claim 21 recites both the decimation feature described above of the L+R signal and the L-R signal and the dynamic control of filters to vary bandwidth of the filtering of the L+R and L-R signals depending upon received signal conditions. As described above, neither Vogt et al. nor Collier et al. teach or suggest either of these functions. The use of decimators by Vogt et al. is only in a signal path in which phase correction signals are generated and are not taught or suggested for use in all signal paths for the L+R and the L-R signals. Therefore, Applicants request the reconsideration and

withdrawal of the rejection of claims 21-24, thereby placing the application in condition for allowance.

In view of the remarks set forth herein, the application is believed to be in condition for allowance and a notice to that effect is solicited. No amendment made herein is related to the statutory requirements of patentability unless expressly stated herein. Further, no amendment herein is made for the purpose of narrowing the scope of any claim, unless Applicants have argued herein that such amendment was made to distinguish over a particular reference or combination of references. In view of the amendments and remarks set forth herein, the application is believed to be in condition for allowance and a notice to that effect is solicited. Nonetheless, should any issues remain that might be subject to resolution through a telephonic interview, the Examiner is requested to telephone the undersigned at (512) 996-6839.

Respectfully submitted,

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